# Model CS6716
# 16 Mb Digital Troposcatter Modem

## Description

The CS6716 is Comtech Systems, state-of-the-art 16 Mbps digital troposcatter modem. The modem's advanced features include Adaptive Link Power Control (ALPC), Forward Error Correction (FEC) with embedded Turbo Product Coding (TPC), a monitor and control port, and an Ethernet connection for a Graphical User Interface (GUI). The front panel has a keypad to set up the modem and an alphanumeric display to indicate the status of the modem and the link performance.

The improvements from previous generation modems include a more compact design, lighter weight and 70% less power consumption. These changes ensure better performance, easier maintenance, fewer spare parts, more robust and reliable operation. The CS6716 standard configuration includes two complete modems in a redundant configuration with automatic monitoring and switchover. The modem design provides the ability to handle excessive multi-path and signal dispersion using adaptive equalization and diversity techniques.

The CS6716 performance exceeds any modem currently on the market. An extremely important feature is its compatibility with legacy troposcatter terminals from Comtech and other companies.

The versatility of the modem allows its use at a fixed site or in transportable terminals for tactical and strategic military applications.
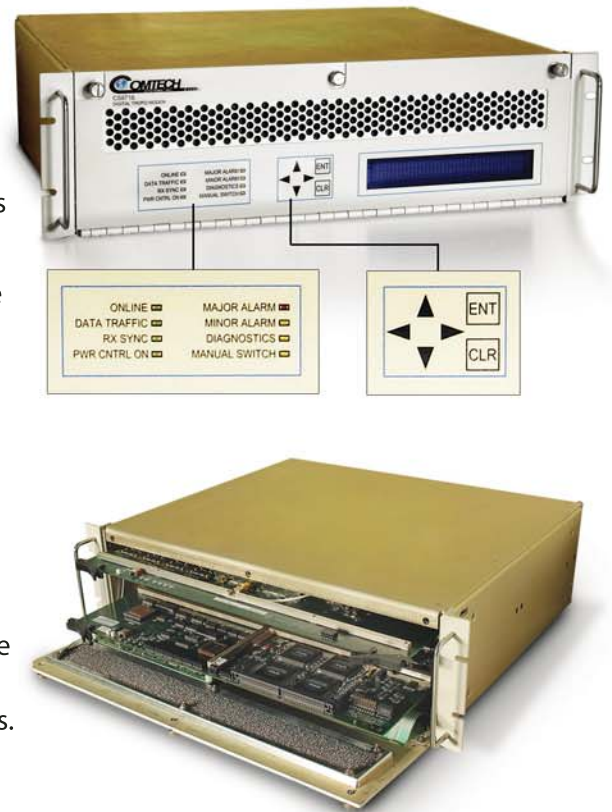
## Standard Features

• Voice, data, and video, capability for encryption

• User programmable data rates up to 16 Mbps with or without FEC

• Data Interface: RS-530 and High-Speed Serial Interface (HSSI)

• Fully redundant design (operating modem and standby modem in one chassis) with manual or automatic switchover and fault monitoring. Optional configurations available.

• Mitigates against multi-path dispersion.

• Microprocessor-controlled, on-line, Built-In Test (BIT) capability for card level fault isolation.

• Front panel display shows the received signal level, Bit Error Rate (BER), modem setup, and alarms.

• PC and Ethernet interface for remote control and monitoring.

• Integral Adaptive Link Power Control.

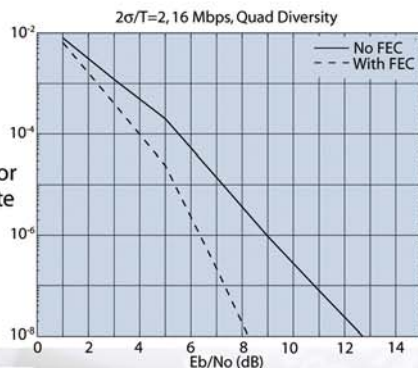• Use selectable Turbo Product Coding (TPC) for improved performanance

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# Digital Troposcatter Modem

The CS6716 Modem is the world's leading high capacity troposcatter modem providing the ability to operate over highly dispersive tropo paths at full performance. The CS6716 and previous generations are field proven and are in use worldwide in commercial and military systems.

Comtech Systems, Inc.
ISO 9001:2000



Certificate Number: IMS-0010

## Measured Performance



2σ/T=2, 16 Mbps, Quad Diversity

— No FEC
- - - With FEC

Error Rate — Eb/No (dB)

## CS6716 Standard Specifications

**User Interfaces**

| | |
|---|---|
| Data channel (maximum user data rates) | 16.384 Mbps (15.616 Mbps-TPC  enabled) |
| Programmable data channel interface | RS-530 or High-Speed Serial Interface (HSSI) |
| Service channels | Two each, up to 160 kbps |
| Service channels interface | RS-530 |
| Integrated BERT | 32 kbps (when enabled) |

**Monitor and Control**

| | |
|---|---|
| Monitor and control port | RS-232 |
| Front panel | Operator control and status capability |
| Redundancy control | Automatic and Manual modes |

**IF Interface**

| | |
|---|---|
| IF interface | 70 MHz, 50 ohm |
| Transmit power out (TX1 and TX2) | 0 dBm ±1 dB (without power control) |
| Modulation | QPSK |
| Receive IF bandwidth | 7 MHz (data rates 2 to 8 Mbps), 12 MHz (data rates up to 16.384 Mbps) |
| Receive dynamic range | +10 to -60 dBm |

**Forward Error Correction**

| | |
|---|---|
| Turbo Product Code | Code rate:  0.95 |

**Adaptive Link Power Control (ALPC)**

| | |
|---|---|
| Attenuation range | 0 to 40 dB in 1 dB steps |
| Control modes | Automatic based on received signal level |

**Troposcatter Performance**

| | |
|---|---|
| Multi path adaptive channel equalization | Dispersion up to 3.0σ/T |
| Maintains BCI in severe fades | Maintain time tracking up to 10 seconds |
| Explicit diversity combiner | Maximal-ratio combining |

**General**

| | |
|---|---|
| Major alarm indication | LED and alpha numeric front panel display, form 'C' contacts |
| Station clock | 10 MHz external |
| Power | 48 VDC, 200 Watts maximum |
| Size | |
| Height | 5.25 inches (13.3 cm) (3 RU) |
| Width | 19 inches (48.2 cm) rack mount |
| Depth | 17 inches (43.2 cm) including front carrying handles |
| Weight | 25 pounds (11.4 kg) |

## Typical System Application



HPA — Quad Diversity Frequency Converter — CS6716 Tropo Modem

16.384 Mbps, RS-530, HSSI, TDMA or IP Services

Two service channels, RS-530 up to 160 Kbps

Digital Voice orderwire